

GenCore version 5.1.3
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OM nuclelc - nuclelc search, using sw model

Run On: February 16, 2003, 15:49:44 ; Search time 215.94 Seconds
(without alignments)
14704.597 Million cell updates/sec

Title: US-09-497-967-102
 Perfect score: 1410
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Scoring table: IDENTITY_NUC

Gapop 10.0 , Gapext 1.0

Searched: 2185239 seqs, 1125999159 residues

Total number of hits satisfying chosen parameters: 4370478

Minimum DB seq length: 0

Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 s

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21: /SID52/gcgdata/geneseq/geneseqn-emb1/NA2000.DAT.*
22: /SID52/gcgdata/geneseq/geneseqn-emb1/NA2001A.DAT.*
23: /SID52/gcgdata/geneseq/geneseqn-emb1/NA2001B.DAT.*
24: /SID52/gcgdata/geneseq/geneseqn-emb1/NA2002.DAT.*

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SUMMARIES

Result No.	Score	Query Match	Length	DB	ID	Description
1	1410	100.0	1410	21	AAA97089	Synthetic I. Multi
2	1404	99.6	1404	21	AAA97040	55kd i-antigen syn
3	1400.8	99.3	1404	21	AAA97065	Synthetic 55kd i-a
4	784.4	55.6	1410	21	AAA97060	55kd i-antigen cod
5	782.6	55.5	1404	21	AAA97038	55kd i-antigen nuc
6	782.6	55.5	1404	21	AAA52136	55 kDa i-antigen g
7	138	9.8	138	21	AAA97075	G5 synthetic gene
8	123	8.7	123	21	AAA97076	G5 synthetic gene
9	105	7.4	117	21	AAA97071	G5 synthetic gene

Accession	Length (bp)	Start (bp)	End (bp)	Gene
AA097072	104	7.4	104	G5 synthetic gene
AA097073	100	7.1	100	G5 synthetic gene
AA097080	100	7.1	100	G5 synthetic gene
AA097077	99	7.0	99	G5 synthetic gene
AA097074	95	6.7	95	G5 synthetic gene
AA097078	95	6.7	95	G5 synthetic gene
AA097083	95	6.7	95	G5 synthetic gene
AA097079	94	6.7	94	G5 synthetic gene
AA097085	94	6.7	94	G5 synthetic gene
AA097084	92	6.5	92	G5 synthetic gene
AA097086	92	6.5	92	G5 synthetic gene
AA097087	92	6.5	92	G5 synthetic gene
AA097082	90	6.4	90	G5 synthetic gene
AA097081	89	6.3	89	G5 synthetic gene
AA097088	86	6.1	86	G5 synthetic gene
AA097036	63.2	4.5	1326	48kd i-antigen nuc
AA097037	63.2	4.5	2486	48kd i-antigen nuc
AA097037	63.2	4.5	2811	48kd i-antigen nuc
AA097037	61.6	4.4	1326	48kd i-antigen nuc
AA097037	38.2	2.7	349980	48kd i-antigen nuc
AA097037	38.2	2.7	4403765	48kd i-antigen nuc
AA097037	38.2	2.7	4411529	48kd i-antigen nuc
AA097037	37.4	2.7	18609	48kd i-antigen nuc
AA097037	37.2	2.6	3946	48kd i-antigen nuc
AA097037	37	2.6	785	48kd i-antigen nuc
AA097037	37	2.6	1829	48kd i-antigen nuc
AA097037	36.2	2.6	913	48kd i-antigen nuc
AA097037	36.2	2.6	913	48kd i-antigen nuc
AA097037	36.2	2.6	913	48kd i-antigen nuc
AA097037	36.2	2.6	913	48kd i-antigen nuc
AA097037	36.2	2.6	913	48kd i-antigen nuc
AA097037	36.2	2.6	913	48kd i-antigen nuc
AA097037	35.8	2.5	1954	48kd i-antigen nuc
AA097037	35.8	2.5	2017	48kd i-antigen nuc
AA097037	35.8	2.5	2413	48kd i-antigen nuc
AA097037	35.4	2.5	4863	48kd i-antigen nuc

XX Clark TG, Dickerson HW, Lin T;
XX WPI; 2000-506071/45.
XX Novel i-antigen polypeptides and polynucleotides from Ichthyophthirius
XX multifiliis, useful for prophylaxis and treatment of Ichthyophthirius
XX infection in fish -
XX Example 5; Figure 2b; 144pp; English.
XX This invention relates to novel i-antigen polypeptide sequences.
XX I-antigens or immobilisation antigens are common to a variety of
XX hymenostomid ciliates and their expression varies in response to
XX environmental stimuli. This invention relates to i-antigens in
XX Ichthyophthirius multifiliis, a protozoan which is an obligate parasite
XX of freshwater fish causing ichthyophthiriasis or white spot disease. The
XX invention includes two polypeptide and polynucleotide sequences for two
XX i-antigens, of 48 and 55 kb. Also included in the invention are
XX antibodies capable of binding to the nucleotide sequences and a method
XX for identifying I. multifiliis serotypes using the nucleotide sequences.
XX A composition (containing the i-antigen nucleotide) capable of eliciting
XX an immune response in fish is useful for prophylaxis, treatment or for
XX controlling I. multifiliis infection in fish. Polynucleotide or protein
XX vaccines comprising a portion of the amplified product encoding an
XX antigenic i-antigen polypeptide obtained is also useful for treating or
XX preventing I. multifiliis infection in fish. Sequences AAA97036-A97042,
XX and AAA97060, AAA97065 and AAA97089 represent i-antigen genes and gene
XX fragments identified in the invention. Sequences AAA97043-A97064
XX (excluding AAA97060) and AAA97071-A97088 represent primers used in the
XX isolation of the i-antigen gene sequences. Sequences AAB25859-B25889 and
XX AAB25893-B25906 represent i-antigen protein and peptide sequences.
XX Sequence 1410 BP; 321 A; 418 C; 339 G; 332 T; 0 other;
Query Match 100.0%; Score 1410; DB 21; Length 1410;
Best Local Similarity 100.0%; Pred. No. 0;
Matches 1410; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
QY 1 ATGAGAACACATCTGGTGATCTGATCATCTCTGTTCATCAACAGATCAAGTCT 60
DB 1 ATGAAGAACACATCTGGTGATCTGATCATCTCTGTTCATCAACAGATCAAGTCT 60
QY 61 GCTAACTGTCTGTGGAAACGAGACACACACCGCTGGACAGTGGACACCTGGAAAC 120
DB 61 GCTAACTGTCTGTGGAAACGAGACACACACCGCTGGACAGTGGACACCTGGAAAC 120
QY 121 CCTGCTAACTGTGTGAAGTGTGAGAACTTCTACTACAAACACGCTGCTTTCGTG 180
DB 121 CCTGCTAACTGTGTGAAGTGTGAGAACTTCTACTACAAACACGCTGCTTTCGTG 180
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DB 421 CCTGTGAACCGCTGGAGAGTCTGTGACCGCTGGAAACCGCTGTACCTACCTGTGGCTCAG 480
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DB 481 TCTAACCTGGCTTCTCTACCGAAACCGCTCTGACGACGAGTGTGACCGCTACGCTACG 540

DB 481 TGTAACTGGCTTGTCTACCGAAACCGCTCTGACGACGAGTGTACCGCTACGCTACG 540
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DB 541 CGCTTTTACCGAGTGTGAACTGTGCGCTGAACCTTCTACTACACGGAACAAACGGA 600
QY 601 AACACCCCTTTTCAACCCCTGGAAAGTCTCAGTGTACCCCTTGTCTGCTATCAAGCCCTGCT 660
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QY 661 AACGTGGCTCAGGCTACCCCTGGGAAACGAGCTACCATCACCGCTCAGTGTAAAGTGGCT 720
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QY 721 TGTCTCAGCGAAACCATCTCTGCTGCTGGAGTGAACAACTGGGTGGCTCAGAACACGAG 780
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DB 1321 CTGAGTGTCTGAAGAAGAACATCCAGTGTGACTTTCGCTAACTTCTCTCTATCTCTCTG 1380
QY 1381 CTGCTGATCTTCTTACTACCTGCTGTAAATAA 1410
DB 1381 CTGCTGATCTTCTTACTACCTGCTGTAAATAA 1410
RESULT 2
AAA97040
ID AAA97040 standard; DNA; 1404 BP.
XX
AC AAA97040;
XX AC
DT 18-DEC-2000 (first entry)
XX DE
XX 55kd i-antigen synthetic gene.

KW Immobilisation antigen; i-antigen; ichthyophthiriasis; vaccine; ds;
 KW white spot disease; freshwater fish; immune response; infection control.
 XX Ichthyophthirius multifiliis.
 OS Synthetic.

XX WO200046373-A1.
 PN 10-AUG-2000.
 PD
 XX 04-FEB-2000; 2000WO-US02962.
 PF
 XX 04-FEB-1999; 99US-0118634.
 PR 02-MAR-1999; 99US-0122372.
 PR 17-MAR-1999; 99US-0124905.
 PR 27-APR-1999; 99US-0131121.
 XX

PA (UYGE-) UNIV GEORGIA RES FOUND INC.
 PA (CORR) CORNELL RES FOUND INC.
 PA (CLARK) CLARK T G.
 PA (DICK/) DICKERSON H W.
 PA (LINT/) LIN T.
 XX
 XX Clark TG, Dickerson HW, Lin T;
 XX WPI; 2000-506071/45.
 XX
 XX Novel i-antigen polypeptides and polynucleotides from Ichthyophthirius
 PT multifiliis, useful for prophylaxis and treatment of Ichthyophthirius
 PT Infection in fish
 XX
 XX Claim 5; Page 102; 144pp; English.

XX This invention relates to novel i-antigen polypeptide sequences.
 CC i-antigens or immobilisation antigens are common to a variety of
 CC hymenostomatid ciliates and their expression varies in response to
 CC environmental stimuli. This invention relates to i-antigens in
 CC Ichthyophthirius multifiliis, a protozoan which is an obligate parasite
 CC of freshwater fish causing ichthyophthiriasis or white spot disease. The
 CC invention includes two polypeptide and polynucleotide sequences for two
 CC i-antigens, of 48 and 55 kd. Also included in the invention are
 CC antibodies capable of binding to the nucleotide sequences and a method
 CC for identifying i. multifiliis serotypes using the nucleotide sequences.
 CC A composition (containing the i-antigen nucleotide) capable of eliciting
 CC an immune response in fish is useful for prophylaxis, treatment or for
 CC vaccines comprising a portion of the amplified product encoding an
 CC antigenic i-antigen polypeptide obtained is also useful for treating or
 CC preventing i. multifiliis infection in fish. Sequences AAA97036-A97042,
 CC and AAA97060, AAA97065 and AAA97089 represent i-antigen genes and gene
 CC fragments identified in the invention. Sequences AAA97043-A97064
 CC (excluding AAA97060) and AAA97071-A97088 represent primers used in the
 CC isolation of the i-antigen gene sequences. Sequences AAB25859-B25889 and
 CC AAB25893-B25906 represent i-antigen protein and peptide sequences.
 XX
 XX Sequence 1404 BP; 317 A; 418 C; 339 G; 330 T; 0 other;

Query Match 99.6%; Score 1404; DB 21; Length 1404;
 Best Local Similarity 100.0%; Pred. No. 0;
 Matches 1404; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

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 DB 601 AACACCCCTTTCAACCCCTGGAAAGTCTCAGTGTACCCCTTGTCCCTGCTATCAAGCCCTGCT 660
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 DB 661 AAGTGGCTCAGGCTACCCCTGGGAAACGAGTACCATCAGCGCTCAGTGTAAAGCTGGCT 720
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 QY 781 TGTACCAACTGTGCTCTCACTTCTACAAACAAACGCTCTCACTTCAACCCCTGGAAAC 840
 DB 781 TGTACCAACTGTGCTCTCACTTCTACAAACAAACGCTCTCACTTCAACCCCTGGAAAC 840
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 DB 901 GCTGTACCCCTGGCTTAAACAGTGAACATCGCTTGTCTGACGGAACCGCTATCGCTTCT 960
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 QY 1021 TTCGACGGAACAACTTCCAGCTGGATCTTCTCGCTGTGAAGCTTGTCTGCTGCTAACAG 1080
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 QY 1081 GTGACGAGGAGCTGTGGCTTACCGCTGGAGAACCCCTACCCCTGATCGCTCAGTGTGCTCTG 1140
 DB 1081 GTGACGAGGAGCTGTGGCTTACCGCTGGAGAACCCCTACCCCTGATCGCTCAGTGTGCTCTG 1140
 QY 1141 GAGTGTCTGCTGGAACCGGCTGCTGACCGAGGAACCACTCTACCTACAAGCAGGCTGT 1200
 DB 1141 GAGTGTCTGCTGGAACCGGCTGCTGACCGAGGAACCACTCTACCTACAAGCAGGCTGT 1200
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 DB 1201 TCTGAGTGTGTAAGTGTGCTGCTAACTTCTACACCAACGAGCAGACCGCTGGTGGCT 1260
 QY 1261 GGAATCGACACCTGTACCTCTTGTGAACAAGAGCTGACCTCTGGAGCTGAGGCTAACCTG 1320

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Db 1261 GGAATCGACACCTGTACCTCTTGTAAACAGAGCTGACCTCTGGAGCTGAGGCTAACCTG 1320
QY 1321 CCGAGCTCTGCTAAAGAACATCCAGTGTGACTTCGCTAACTTCCTCTATCTCTG 1380
Db 1321 CCGAGCTCTGCTAAAGAACATCCAGTGTGACTTCGCTAACTTCCTCTATCTCTG 1380
QY 1381 CTGCTGATCTCTTACTACTGCTG 1404
Db 1381 CTGCTGATCTCTTACTACTGCTG 1404
RESULT 3
AAA97065
ID AAA97065 standard; DNA; 1404 BP.
XX
AC AAA97065;
XX
DT 18-DEC-2000 (first entry)
XX
DE Synthetic 55kd i-antigen gene sequence.
XX
KW Immobilisation antigen; i-antigen; ichthyophthiriasis; vaccine; ds;
KW white spot disease; freshwater fish; immune response; infection control.
XX
OS Ichthyophthirius multifiliis.
OS Synthetic.
XX
PN W0200046373-A1.
XX
PD 10-AUG-2000.
XX
PF 04-FEB-2000; 2000MO-US02962.
XX
PR 04-FEB-1999; 99US-0118634.
PR 02-MAR-1999; 99US-0122372.
PR 17-MAR-1999; 99US-0124905.
PR 27-APR-1999; 99US-0131121.
XX
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XX
PI Clark TG, Dickerson HW, Lin T;
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DR WPI; 2000-506071/45.
XX
PT Novel i-antigen polypeptides and polynucleotides from Ichthyophthirius
PT multifiliis, useful for prophylaxis and treatment of Ichthyophthirius
PT infection in fish -
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PS Example 5; Figure 13; 144pp; English.
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CC I-antigens or immobilisation antigens are common to a variety of
CC hymenostomatid ciliates and their expression varies in response to
CC environmental stimuli. This invention relates to i-antigens in
CC Ichthyophthirius multifiliis, a protozoan which is an obligate parasite
CC of freshwater fish causing ichthyophthiriasis or white spot disease. The
CC invention includes two polypeptide and polynucleotide sequences for
CC i-antigens, of 48 and 55 kd. Also included in the invention are
CC antibodies capable of binding to the nucleotide sequences and a method
CC for identifying I. multifiliis serotypes using the nucleotide sequences.
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CC an immune response in fish is useful for prophylaxis, treatment or for
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CC preventing I. multifiliis infection in fish. Sequences AAA97036-A97042,
CC and AAA97060, AAA97065 and AAA97089 represent i-antigen genes and gene
CC fragments identified in the invention. Sequences AAA97043-A97064

(excluding AAA97060) and AAA97071-A97088 represent primers used in the
CC isolation of the i-antigen gene sequences. Sequences AAB25859-B25889 and
CC AAB25893-B25906 represent i-antigen protein and peptide sequences.
XX
SQ Sequence 1404 BP; 317 A; 418 C; 339 G; 330 T; 0 other;
Query Match 99.3%; Score 1400.8; DB 21; Length 1404;
Best Local Similarity 99.9%; Pred. No. 0;
Matches 1402; Conservative 0; Mismatches 2; Indels 0; Gaps 0;
QY 1 ATGAGAGAACATCTCTGGTGATCTCTGATCATCTCTCTGTTTCATCAACACAGATCAAGTCT 60
Db 1 ATGAGAGAACATCTCTGGTGATCTCTGATCATCTCTCTGTTTCATCAACACAGATCAAGTCT 60
QY 61 GCTAACTGTCTGTGGAAACCGAGACCAACACCGCTGGACAGGTGGAGACCTGGGAACC 120
Db 61 GCTAACTGTCTGTGGAAACCGAGACCAACACCGCTGGACAGGTGGAGACCTGGGAACC 120
QY 121 CCTGCTAACTGTGTGAAGTGTGAGAAAGTCTTACTACTACAACAGCTGCTGCTTTCG 180
Db 121 CCTGCTAACTGTGTGAAGTGTGAGAAAGTCTTACTACTACAACAGCTGCTGCTTTCG 180
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Db 181 CCTGGAGCTTCTACCTGTACCCCTTGTCTCAGAAAGAGGAGCTGGAGCTCAGCCTAAC 240
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Db 241 CCTCTGCTACCGCTAACCTGTGACCCAGTGAAGTGTCTGCTGGAACCGCT 300
QY 301 ATCGCTGGAGGAGCTACCGACTACCGTGTATCATCACCAGGTGTGAAGTGTGCTGCGCATC 360
Db 301 ATCGCTGGAGGAGCTACCGACTACCGTGTATCATCACCAGGTGTGAAGTGTGCTGCGCATC 360
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Db 361 AACTTCTTACAAACGAGACCGCTCTACTTCAACGCTGGAGCTTCTACCTGTACCGCTTGT 420
QY 421 CCTGTGAACCGCTGGGAGGAGCTCTGACCGCTGGAACGCTGCTACCATCTGCTGCTCAG 480
Db 421 CCTGTGAACCGCTGGGAGGAGCTCTGACCGCTGGAACGCTGCTACCATCTGCTGCTCAG 480
QY 481 TGTAACTGTGCTCTCTACCGGAACCGCTCTGAGAGGAGCTGACCAACCGCTACCTGCTG 540
Db 481 TGTAACTGTGCTCTCTACCGGAACCGCTCTGAGAGGAGCTGACCAACCGCTACCTGCTG 540
QY 541 CGCTCTTTTACCGAGTGTGTGAAGTGTGCGCTGAACTTCTACTACAACGGAACACCGGA 600
Db 541 CGCTCTTTTACCGAGTGTGTGAAGTGTGCGCTGAACTTCTACTACAACGGAACACCGGA 600
QY 601 AACACCCCTTTCAACCTGGAAGTCTCAGTGTACCCCTTGTCTGCTATCAAGCTGCT 660
Db 601 AACACCCCTTTCAACCTGGAAGTCTCAGTGTACCCCTTGTCTGCTATCAAGCTGCT 660
QY 661 AACGTGCTCAGGCTACCCCTGGGAACGAGCTACCATCACCCTCAGTGTAACTGCTGCT 720
Db 661 AACGTGCTCAGGCTACCCCTGGGAACGAGCTACCATCACCCTCAGTGTAACTGCTGCT 720
QY 721 TGTCTGAGCAACCATCTCTGCTGTGAGTGAACAACTGGGTGCTCAGAACACCGAG 780
Db 721 TGTCTGAGCAACCATCTCTGCTGTGAGTGAACAACTGGGTGCTCAGAACACCGAG 780
QY 781 TGTACCACTGCTGCTCTTCTTCTTCAACAAACGCTCCTTAACCTTAACCTTGAAC 840
Db 781 TGTACCACTGCTGCTCTTCTTCTTCAACAAACGCTCCTTAACCTTAACCTTGAAC 840
QY 841 TCTACCTGCTCTGCTCTGCTTCTTCTTCTTCTTCTTCTTCTTCTTCTTCTTCTTCT 900
Db 841 TCTACCTGCTCTGCTCTGCTTCTTCTTCTTCTTCTTCTTCTTCTTCTTCTTCTTCT 900
QY 901 GCTGCTACCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 960
Db 901 GCTGCTACCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 960

Qy	961	GGAGCTACCAACTACGTGATCTCTGCAGACCGAGTGTCTGAACTGTGTGCTGAACCTCTAC	1020
Db	961	GGAGCTACCAACTACGTGATCTCTGCAGACCGAGTGTCTGAACTGTGTGCTGAACCTCTAC	1020
Qy	1021	TTGCAGCGAANCAACTCCAGGCTGGATCTTCTCGCTGAAGGCTGTCTGTCTGAACAAG	1080
Db	1021	TTGCAGCGAANCAACTCCAGGCTGGATCTTCTCGCTGAAGGCTGTCTGTCTGAACAAG	1080
Qy	1081	GTGAGGGAGCTGTGGCTACCCGCTGGAGAACCGGTACCCCTGATCGCTCAGTGTGCTCTG	1140
Db	1081	GTGAGGGAGCTGTGGCTACCCGCTGGAGAACCGGTACCCCTGATCGCTCAGTGTGCTCTG	1140
Qy	1141	GAGTGTCTCTGCGAACCCTGTGCACGACGAGACCACTCTACCTACAAGCAGGCTGT	1200
Db	1141	GAGTGTCTCTGCGAACCCTGTGCACGACGAGACCACTCTACCTACAAGCAGGCTGT	1200
Qy	1201	TCTGAGTGTGTGAAGTGTGCTGCTAACTTCTACACCACAGCAGACCGACTGGGTGGCT	1260
Db	1201	TCTGAGTGTGTGAAGTGTGCTGCTAACTTCTACACCACAGCAGACCGACTGGGTGGCT	1260
Qy	1261	GGAATCGACACCTGTACCTCTTGTAAAGAAGTGCACCTCTGGAGCTGAGGCTAAACCTG	1320
Db	1261	GGAATCGACACCTGTACCTCTTGTAAAGAAGTGCACCTCTGGAGCTGAGGCTAAACCTG	1320
Qy	1321	CCTGAGTCTGCTAAAGAAGAACATCCAGTGCACCTTCGCTAACTTCCTGTCATCTCTCTG	1380
Db	1321	CCTGAGTCTGCTAAAGAAGAACATCCAGTGCACCTTCGCTAACTTCCTGTCATCTCTCTG	1380
Qy	1381	CTGCTGATCTCTTACTACTGCTG	1404
Db	1381	CTGCTGATCTCTTACTACTGCTG	1404

RESULT 4
AAA97060
ID AAA97060 standard; DNA; 1410 BP.

DT 18-DEC-2000 (first entry)
XX
DE 55kD i-antigen coding region

KW	Immobilisation antigen; I-antigen; ichthyophthiriasis; vaccine; ds;
KW	white spot disease; freshwater fish; immune response; infection control
XX	
OS	Ichthyophthirius multifiliis.

OS Ichthyophthirius multifiliis.
XX
PN WO200046373-A1.
XX
PD 10-AUG-2000.

PF	04-FEB-2000; 2000WO-US02962.
XX	
PR	04-FEB-1999; 99US-0118634.
PR	02-MAR-1999; 99US-0122372.
PR	17-MAR-1999; 99US-0124905.
PR	27-APR-1999; 99US-0131121.

PA (UYGE-) UNIV GEORGIA RES FOUND INC.
PA (CORR) CORNELL RES FOUND INC.
PA (CLAR/) CLARK T G.
PA (DICK/) DICKERSON H W.
PA (LINT/) LIN T.

PPI Clark TG, Dickerson HW, Lin T;
 XXX
 DR WPI; 2000-506071/45.

Disclosure; Figure 2: 144pp; English.

This invention relates to novel i-antigen polypeptide sequences. I-antigens or immobilisation antigens are common to a variety of hymenostomid ciliates and their expression varies in response to environmental stimuli. This invention relates to i-antigens in *Ichthyophthirius multifiliis*, a protozoan which is an obligate parasite of freshwater fish causing ichthyophthiriasis or white spot disease. The invention includes two polypeptide and polynucleotide sequences for two i-antigens, of 48 and 55 kD. Also included in the invention are antibodies capable of binding to the nucleotide sequences and a method for identifying *I. multifiliis* serotypes using the nucleotide sequences. A composition (containing the i-antigen nucleotide) capable of eliciting an immune response in fish is useful for prophylaxis, treatment or for controlling *I. multifiliis* infection in fish. Polynucleotide or protein vaccines comprising a portion of the amplified product encoding an antigenic i-antigen polypeptide obtained is also useful for treating or preventing *I. multifiliis* infection in fish. Sequences AAA97036-A97042, and AAA97060, AAA97065 and AAA97089 represent i-antigen genes and gene fragments identified in the invention. Sequences AAA97043-A97064 (excluding AAA97060) and AAA97071-A97088 represent primers used in the isolation of the i-antigen gene sequences. Sequences AAB25859-925889 and AAB25893-925906 represent i-antigen protein and peptide sequences.

Sequence 1410 BP: 449 A; 240 C; 259 G; 462 T; 0 other;

Query Match	55.6%	Score 784.4	DB 21	Length 1410	
Best Local Similarity	72.3%	Prod. No. 2.9e-216			
Matches 1019	Conservative	0	Mismatches 391	Indels	Gaps
Qy	1	ATGAAGAACAACATCCTGGTGATCTCTGATCATCTCTCTGTTTCATCAACCAAGTCT	60		
Db	1	ATGAANAATAATTTTGTATATGTGATTTTTCATTATTATCAATTAATTAATTAATCT	60		
Qy	61	GCTAACTCTCTGTGGGACCGAGACCAACACCGCTGGACAGGTGGACGCTGGGAACC	120		
Db	61	GCTAATTCCTGTGGAACTGAAACTTAACACGCCGATAGTTGTATGATCTAGGAAT	120		
Qy	121	CCTGCTAACTGTGGAAGTCTCAGAGAATCTTACTACAACACGCTGCTTTGCTG	180		
Db	121	CCTGCAAAATGTGTAATTTAGAAAAAATTTTATTATAATATGCTGCTGCTTTGCTT	180		
Qy	181	CCTGGAGCTTCTACTGTACCCCTTGTCTCAGAGAAGGACGCTGGAGCTACGCCCTAC	240		
Db	181	CCTGGTCTAGTACGCTGTACACCTTGTCCATAAAAAAAGATGCTGGTGCCTTAACCAAT	240		
Qy	241	CCTCCTGCTACCGCTAACCTGGTGACCCAGTGTAAACGTGAAGTGTCTGCTGGGAACCGCT	300		
Db	241	CCAGCTGTACTGCTAATTTAGTCACATAATGTAAACGTTAAATGCCCTGCTGGTACCGCA	300		
Qy	301	ATCGCTGGAGAGCTACCGACTACGCTGCTATCATCACCGAGTGTGTGAATCTGTGCAATC	360		
Db	301	ATTGAGGTGGAGCAACAGATTTATGCAAGCAATTAACAGAAATGTGTTAATGTAGAATT	360		
Qy	361	AACCTCTACAACGAGAAGCTCTCACTCAACGCTGGAGCTTCTACTCTGTACCGCTTGT	420		
Db	361	AATTTTATATGAATGCTCCAAATTTTAATGCAGGTGCTAGTACATGCACAGCTTGT	420		
Qy	421	CCTGTGAACCGGTGGGAGAGCTTCGACCGCTGGAAACGCTGCTACCATCTGGTGCAG	480		
Db	421	CCGTAACACAGAGTTGGTGGTCAATTCAGTCTGGTAAATGCCCTACCATAGTCGCATAA	480		
Qy	481	TGTAACGTGGCTTGTCTACCGGACCGCTTCGGACACGGAGTGACCAACCGACTAGGTG	540		
Db	481	TGTAACGTGCGATGTCTCTACTGTACTGTGCATTTGATGATGGAGTACTACTGATATGTT	540		
Qy	541	CGCTCTTTTCCAGGTGTGGAAGTGTGGCTGAACCTTCTACTACAACGGAAACACGGA	600		
Db	541	AGATCAATTCACAGATGTGTAATGTAGACTTAACCTTTTACTATATGTTGTAATAATGTT	600		
Qy	601	AACACCCCTTTCACCCCTGGAAAGTCTCAGTGTACCCCTTGTCTGCTATCAAGCCCTGCT	660		

Db	601	AATACTCCTTTCAATCCAGGTAATAAGTTAATGCACACCTTGTCCGGCAATTAACCTGCT	660
Qy	661	AACTGGCTCAGGCTACCTGGGAACACGCTACACGCTCAGTGTAACTGGCT	720
Db	661	ATGTTGCTTAAGCTACTTGAAGTAATGATGCTACATAACCGCATATGTAAGTTGCA	720
Qy	721	TGTCCTGACGGAACCATCTGCTGCTGGAGTGAACAACTGGTGGCTCAGAACACGAG	780
Db	721	TGCCCCGTGATGCTATAAGTCTGCTGGAGTAAATAATGGGTAGCACAACACATGAA	780
Qy	781	TGTACCACTGTGCTCCTTAACCTTACACACACACGCTCCTAACTTCAACCCCTGGAAAC	840
Db	781	TGTACTAATGTGCTCCTAACCTTTACATAATAATGCTCCTTAATTTCAATCCAGTTAAT	840
Qy	841	TCTACCTGTCTGCTTGTCTCTAACAGGACTACGGAGCTGAGGCTACCGCTGGAGGA	900
Db	841	AGTACATGCTACCTTGCCCCAGCAATAAAGATTATGGTGTGAAGCCACTGCGAGTGGT	900
Qy	901	GCTGCTACCGTGGCTAAGCAGTGTACATCGCTTGTCTGACGGAACGCTATCGCTTCT	960
Db	901	GCGGCTACTTTAGCCAAATAATGTATATGTGATGCCCTGATGGTACTGCAATTTGCTAGT	960
Qy	961	GGAGCTACCAACTACCTGATCTGCTGACAGACCGAGTGTCTGAACTGTCTGCTAACTTCTAC	1020
Db	961	GGAGCAACTAATATGTAATATATAACAGAACTGTCTAAATTTGCTGCTAACTTTTAT	1020
Qy	1021	TTGACGGAACAACTTCAGGCTGGATCTTCGCTGTGAAGGCTTGCTCTGCTTAACAAG	1080
Db	1021	TTTGATGGTAATAATTTCTAGGAGGAGTAGTAGATGCAAGCATGTCAGCAATAATAA	1080
Qy	1081	GTGAGGAGCTGTGCTACCGCTGAGGACCGCTTACCCCTGATCGCTCAGTGTCTCTG	1140
Db	1081	GTTTAAGGCGCTGTAGCAACTGCAGTGTGCTACTTAAATTCATATGTCSCCTT	1140
Qy	1141	GAGTGTCTCTGCTGGAACCGTGTGACCGAGGACACACCTCTACCTCAAGCAGCTGCT	1200
Db	1141	GAATGCCCTGCTGGTACTGTACTACCGATGGAACAACATCTACTATATAATAAAGCAGA	1200
Qy	1201	TCTGAGTGTGTGAAGTGTGCTGCTACTTCTACACCAACAGCAGCGAGTGGTGGCT	1260
Db	1201	TCTGAATGTGTAAATGTGTGCGCACTTTTATCTACAAATAAATCAATGATGGGTAGCA	1260
Qy	1261	GGAATCGACACCTGTACTCTTGTAAACAAGAGCTGACCTCTGGAGCTGAGGCTAACTG	1320
Db	1261	GGTATTGATACATGTACTAGTTGTATAAATAAATAAATTAACCTTCTGGCGCTGAAGCTAATTA	1320
Qy	1321	CCTGAGTCTGTAGAGACATCCAGTGTGCTTCTGCTAACTTCTGCTATCTCTCTG	1380
Db	1321	CCTGAATCTGTGTAATAAATAATAATAATGATGATTTCTGCTAAATTTTATCAATTTCCITTA	1380
Qy	1381	CTGCTGATCTCTTACTACCTGCTGTAATAA	1410
Db	1381	TTATGATTTCTTATTATTATTATGATGA	1410
RESULT 5			
ID	AAA97038		
XX	AAA97038 standard; DNA; 1404 BP.		
AC	AAA97038;		
XX			
DT	18-DEC-2000 (first entry)		
XX			
DE	55kd i-antigen nucleotide sequence.		
XX			
KW	Immobilisation antigen; i-antigen; ichthyophthiriasis; vaccine; ds;		
XX	white spot disease; freshwater fish; immune response; infection control.		
OS	Ichthyophthirius multifiliis.		
XX			
PN	WO200046373-A1.		
XX			
PD	10-AUG-2000.		

XX	04-FEB-2000; 2000WO-US02962.		
PF			
XX	04-FEB-1999; 99US-0118634.		
PR	02-MAR-1999; 99US-0122372.		
PR	17-MAR-1999; 99US-0124905.		
XX	27-APR-1999; 99US-0131121.		
XX	(UYCE-) UNIV GEORGIA RES FOUND INC.		
PA	(CORR) CORNELL RES FOUND INC.		
PA	(CLAR/) CLARK T G.		
PA	(DICK/) DICKERSON H W.		
XX	(LINT/) LIN T.		
XX	Clark TG, Dickerson HW, Lin T;		
PI	WPI: 2000-506071/45.		
DR			
XX	Novel i-antigen polypeptides and polynucleotides from Ichthyophthirius		
PT	multifiliis, useful for prophylaxis and treatment of Ichthyophthirius		
PT	infection in fish		
XX			
PS	Claim 5; Figure 3; 144pp; English.		
XX			
CC	This invention relates to novel i-antigen polypeptide sequences.		
CC	i-antigens or immobilisation antigens ar common to a variety of		
CC	hymenostomatid ciliates and their expression varies in response to		
CC	environmental stimuli. This invention relates to i-antigens in		
CC	Ichthyophthirius multifiliis, a protozoan which is an obligate parasite		
CC	of freshwater fish causing ichthyophthiriasis or white spot disease. The		
CC	invention includes two polypeptide and polynucleotide sequences for two		
CC	i-antigens, of 48 and 55 kb. Also included in the invention are		
CC	antibodies capable of binding to the nucleotide sequences and a method		
CC	for identifying I. multifiliis serotypes using the nucleotide sequences.		
CC	A composition (containing the i-antigen nucleotide) capable of eliciting		
CC	an immune response in fish is useful for prophylaxis, treatment or for		
CC	controlling I. multifiliis infection in fish. Polynucleotide or protein		
CC	vaccines comprising a portion of the amplified product encoding an		
CC	antigenic i-antigen polypeptide obtained is also useful for treating or		
CC	preventing I. multifiliis infection in fish. Sequences AAA97036-A97042,		
CC	and AAA97060, AAA97065 and AAA97089 represent i-antigen genes and gene		
CC	fragments identified in the invention. Sequences AAA97043-A97064		
CC	(excluding AAA97060) and AAA97071-A97088 represent primers used in the		
CC	isolation of the i-antigen gene sequences. Sequences AAB25859-B25889 and		
CC	AAB25893-B25906 represent i-antigen protein and peptide sequences.		
XX			
SQ	Sequence 1404 BP; 447 A; 240 C; 257 G; 460 T; 0 other;		
Query Match 55.5%; Score 782.6; DB 21; Length 1404;			
Best Local Similarity 72.5%; Pred. No. 9.6e-216;			
Matches 1013; Conservative 0; Mismatches 384; Indels 0; Gaps 0;			
Qy	1	ATGAAGAACAACATCCCTGGTGTGATCTCTCTCTCATCAACAGATCAAGTCT	60
Db	1	ATGAAAAATAATATTTAGTAATATTGATTTATTTATCAATTTATAATTAATCT	60
Qy	61	GCTAACTGCTCTGGGAACCGAGACCAACCGCTGGACAGGTGGACGCTGGGAACC	120
Db	61	GCTAATTTGCTCTGTGGAACTGAACTTAACACAGCCGGATAAGTTGATCTAGGAAC	120
Qy	121	CCTGCTAACTGTGTGAAGTGTCAAGAAGAACTTCTACTACAAACAGCTGCTCTTCGTG	180
Db	121	CCTGCAAAATGTGTTAATTTAGAAAAAAGCTTTTATTATAATAATGCTGCTTCGT	180
Qy	181	CCTGGAGCTTCTACTGCTACCCCTTGCTCAGAAGGAGCCTGGAGCTCAGCCTAAC	240
Db	181	CCTGGTGTAGTAGCTGTACACCTTGTCCTAATAAAAAAGATGCTGCTTAAACCAAT	240
Qy	241	CCTCTGCTACCGCTAACTGGTGACCCAGTGTAACTGAAGTGTCTGCTGGAACCGCT	300
Db	241	CCACCTGCTACTGCTAATTTAGTCACATAATGTAAACGTTAAATGCCCTGCTGACGCA	300
Qy	301	ATCGCTGGAGGAGCTACCGACTACGCTGCTATCATCACCAGTGTGTGGAATCTGCGCATC	360

Db	301	ATTG	CGAGTGGAGCAACAGAAATATG	CAGCAATAATCACAGAATGT	TAAATGTAGAAATT	360
Qy	361	AAC	TTCTACACGAGAACGCTCC	TAACTTCAACGCTGGAGCTTCT	ACCTGTACCGCTGTG	420
Db	361	AAT	TTTTATATGAAATGCTCC	AAATTTTATGACAGGTGCT	AGTACATGACACAGCTTGT	420
Qy	421	CCT	GTGAACCGCTGGGAGAGCTCT	GACCGCTGGAACGCTGCT	ACCATCGTGGCTCAG	480
Db	421	CCG	TAAACAGAGTTGGTGTG	TGCTGCTGCTGCTGATG	TGGAGTAACTACTGATATGTT	540
Qy	481	TGT	AACGTGGCTTCTCTACCG	GAACCGCTCTGGACGACGAGT	GACACCGCTACGTG	540
Db	481	TGT	AACGTGCGATGCTCTACT	GTGCTGCTGATGATGGA	TGGAGTAACTACTGATATGTT	540
Qy	541	CGC	TTCTTCCACCGAGTGTG	GAAGTCTGCCTGAACTTCT	ACTACAACGGAACAACGGA	600
Db	541	AGAT	CATTCAGANA	GTGTTAAATGTACACTT	AACTTTACTATATGTTAA	600
Qy	601	AAC	ACCCCTTTCAACCCGTG	GAAGTCTCAGTGTACCCCT	TGTCCTGCTATCAACGCTGCT	660
Db	601	AAT	ACTCCTTTCAATCCAG	TAAAGTTAATGCACACCT	TGTCGGCAATTTAAACCTGCT	660
Qy	661	AAC	TGGCTCAGGCTACCC	TGGGAACGAGCTACCAT	CACGCTCAGTGTAA	720
Db	661	AAT	GTGCTTAAAGCTACTT	TAGGTAATGATGCTACA	ATAACGCTAATGTAAGCTTGCA	720
Qy	721	TGT	CCTCAGCGAACCACTCT	CTGCTGCTGGAGTGAACA	ACTGGTGGCTCAGAACCCGAG	780
Db	721	TG	CCCTGATGGTACTAT	AGTGTGCTGGAGTAAATA	ATTGGGTAGCAACAACACTGAA	780
Qy	781	TGT	ACCAACTGTGCTCCT	CAACTTCTACAACAACAGCT	TCCTAACTTCAACCCCTGGAAC	840
Db	781	TGT	ACTAATTTGTCTCCT	TAATTTTACAATAATA	TGCTCCTAATTTCAATCCAGGTAA	840
Qy	841	TC	TACCTGTCTGCTTGT	CCTGCTTCAACAGGACTAC	GAGCTGAGGCTACCGCTGGAGGA	900
Db	841	AG	TACATGTGCTTGT	TGCCCAGCAATAA	GAAGATTATGGTGTGAAGCCACTGCAAGTGGT	900
Qy	901	GCT	CTACCCCTGCTAAG	CAGTGTAACTCGCTCTGCTG	CAGGACCGCTATCGCTTCT	960
Db	901	GC	CGCTACTTTAGCC	AAATAATGTAAATTTGCAT	GCCCTGATGGTACTGCAATTTGCTAGT	960
Qy	961	GG	AGCTACCAACTAC	GTGATCTCTGCAGACCGAGT	CTGTAACCTGTGCTGCTAACTTCTAC	1020
Db	961	GG	AGCAACTAATTTAT	GTAATATTATAACAGAA	TGCTCTAAATTTGCTGTCTAACTTTTAT	1020
Qy	1021	TT	GCACGGAACAAC	TTCCAGGCTGATCTT	CTCGCTGTAAGGCTTGTCTGCTAACAAAG	1080
Db	1021	TTT	GATGGTAAATAATTT	TCTAGGCAGGAAGTAG	ATAGCAAGCATGTCCAGCAATAATA	1080
Qy	1081	GT	CAGGAGCTGTGCT	ACCCTCGAGAACCGCTAC	CTGATCGCTCAGTGTGCTGT	1140
Db	1081	GTT	TAGCGCTGTAGCA	ACTGCAGTGGTACTGCTACT	TTAATTTGATATGATTTGCTCCTT	1140
Qy	1141	GAG	TGCTCTGCTGGA	ACCGTGTGACCGACGGAAC	CACTCTACTACAAGCAGGCTGTCT	1200
Db	1141	GA	ATGCCCTGCTG	TACTCTACTCCGAT	GGAACAACATCTACTTATAAATAGCAGCA	1200
Qy	1201	TC	TGAGTGTGTGA	GTGTGCTGCTAACTTCTAC	ACCACCAAGCAGACCGCTGGGTGGCT	1260
Db	1201	TCT	GATGTGTTAAATGT	GCTGCCAACITTTTATACT	ACAAAAATAAACTGATTTGGGTAGCA	1260
Qy	1261	GGA	ATCGACACCTGTAC	CTTGTGTACAAGAGCTG	ACCTCTGGAGCTGAGGCTAACCTG	1320
Db	1261	GG	TATGTATACATGT	ACTAGTTGTATAAAAAAT	TAACTTCTGGCGCTGAAGCTAATTTA	1320
Qy	1321	CCT	GAGCTGCTAAGA	GAACAACCTCAGGTGT	GACTTCGCTGCTAACTTCTCTCTCTCTG	1380
Db	1321	CCT	GAACTGCTAAAA	AAAAATAATATATG	TGATTTGCTGCTAAATTTTATCAATTTCTCTTA	1380
Qy	1381	CT	CGCTGATCTCTT	ACTACTA	1397	

Db	1381	TTATTGATTCTTATTA	1397
RESULT	6		
AAAS2136			
ID	AAA52136	standard; DNA; 1404 BP.	
XX			
AC	AAA52136;		
XX			
DT	04-DEC-2000	(first entry)	
XX			
DE	55 kDa i-antigen gene.		
XX			
KW	BTUL; beta-tubulin; protein expression system; negative selection;		
KW	pacitaxel sensitivity; cell surface; antigen; protozoa; ciliate;		
KW	live vaccine; Ichthyophthius multifiliis; immobilization-antigen;		
KW	i-antigen; freshwater; fish; protozoacide; ds.		
OS	Ichthyophthius multifiliis.		
XX			
FH	Key	Location/Qualifiers	
FT	CDS	1..1404	
ET		/*tag= a	
FT		/codon= (seq:"TAA", aa:Gln)	
FT		/product= 55_kDa_i-antigen	
FT		/partial	
XX			
PN	W0200046381-A1.		
XX			
PD	10-AUG-2000.		
XX			
PF	04-FEB-2000; 2000WO-US02966.		
XX			
PR	04-FEB-1999; 99US-0118634.		
PR	02-MAR-1999; 99US-0122372.		
PR	17-MAR-1999; 99US-0124905.		
PR	27-APR-1999; 99US-0131121.		
XX			
PA	(UYGE-) UNIV GEORGIA RES FOUND INC.		
PA	(GAER/) GAERTIG J.		
PA	(DICK/) DICKERSON H W.		
PA	(CLARK/) CLARK T G.		
XX			
PI	Gaertig J, Dickerson HW, Clark TG;		
XX			
DR	WPI; 2000-514962/46.		
DR	P-PSDB; AAY97177.		
XX			
PT	Recombinant expression systems for expressing heterologous nucleic		
PT	acids and producing recombinant protein, comprises nonpathogenic		
PT	protozoa such as Tetrahymena resistant to paclitaxel		
XX			
PS	Disclosure; Flg 3B; 83pp; English.		
XX			
CC	Tetrahymena thermophila expresses two major beta-tubulin genes (BTU		
CC	BTU2), which encode identical beta-tubulin proteins. Either of the		
CC	genes (but not both at once) can be disrupted without a detectable		
CC	in the cell phenotype. A K350L substitution in the BTUL beta-tubul		
CC	protein confers increased resistance to microtubule-depolymerizing		
CC	and increased sensitivity to paclitaxel, a microtubule-stabilizing		
CC	Cells carrying the Btul-IK350M allele can be transformed to pacit		
CC	resistance by gene replacement of Btul-IK350M with a wild-type BTU		
CC	fragment, eliminating the need to incorporate a means for positive		
CC	selection. Where the host organism is not a T. thermophila mutant		
CC	containing the Btul-IK350M allele, BTUL::neoI construct, which		
CC	substitutes the coding region of the neoI gene (conferring resistance		
CC	paromycin) for that of BTUL, can be used to generate BTUL gene kn		
CC	and for positive selection. Heterologous nucleic acids (especially		
CC	encoding antigenic polypeptides) can be inserted into a BTU gene fr		
CC	successful cell-surface expression that is maintained by way of new		
CC	selection. Preferred expression vectors disrupt the Btul-IK350M gene		
CC	homologous recombination-mediated insertion of a heterologous nucl		
CC	acid, thereby restoring resistance to paclitaxel in the resulting		

CC transgenic host. Transgenic ciliated protozoa are useful as live vaccines
CC for stimulating an immune response in a vertebrate. The transgenic
CC protozoan host cells are also useful for producing polyclonal antibodies
CC (claimed). In particular, Tetrahymena expressing ichthyophthirius
CC multifiliis immobilization-antigen (i-antigen) protein on their surface
CC are effective vehicles for vaccination of freshwater fish against
CC infection by I. multifiliis.
XX
SQ

Sequence 1404 BP; 447 A; 241 C; 256 G; 460 T; 0 other;

Query Match 55.5%; Score 782.6; DB 21; Length 1404;
Best Local Similarity 72.5%; Pred. No. 9.6e-216;
Matches 1013; Conservative 0; Mismatches 384; Indels 0; Gaps 0;

```
Qy 1 ATGAAGAACAACATCGTGGTATCGTATCATCTCTGTTTCATCAACACAGATCAAGTCT 60
Db 1 ATGAAGAACAACATCGTGGTATCGTATCATCTCTGTTTCATCAACACAGATCAAGTCT 60
Qy 61 GCTAACTGTCCTGTGGAAACGAGACACACCGCTGGACAGGTGGACGACCTGGGAACC 120
Db 61 GCTAACTGTCCTGTGGAAACGAGACACACCGCTGGACAGGTGGACGACCTGGGAACC 120
Qy 121 CCGTGAACCTGTGNACTGTGAGAACTTCTACTACAAACGCTGCTGCTTTCGTT 180
Db 121 CCGTGAACCTGTGNACTGTGAGAACTTCTACTACAAACGCTGCTGCTTTCGTT 180
Qy 181 CCGTGAACCTGTGNACTGTGAGAACTTCTACTACAAACGCTGCTGCTTTCGTT 240
Db 181 CCGTGAACCTGTGNACTGTGAGAACTTCTACTACAAACGCTGCTGCTTTCGTT 240
Qy 241 CCGTGAACCTGTGNACTGTGAGAACTTCTACTACAAACGCTGCTGCTTTCGTT 300
Db 241 CCGTGAACCTGTGNACTGTGAGAACTTCTACTACAAACGCTGCTGCTTTCGTT 300
Qy 301 ATGCGTGGAGGAGTACCGACATGCTATCATCACCGAGTGTGAACGTGCGCATC 360
Db 301 ATGCGTGGAGGAGTACCGACATGCTATCATCACCGAGTGTGAACGTGCGCATC 360
Qy 361 AACTTCTACAAGGAGACCTCTCACTTCAACGCTGGAGCTTCACTGTACCGCTTGT 420
Db 361 AACTTCTACAAGGAGACCTCTCACTTCAACGCTGGAGCTTCACTGTACCGCTTGT 420
Qy 421 CCGTGAACCTGTGNACTGTGAGAACTTCTACTACAAACGCTGCTGCTTTCGTT 480
Db 421 CCGTGAACCTGTGNACTGTGAGAACTTCTACTACAAACGCTGCTGCTTTCGTT 480
Qy 481 TGTAACTGCTGCTTCACTACCGACCGCTGCTGAGCGGAGTGCACACCGACTACGTTG 540
Db 481 TGTAACTGCTGCTTCACTACCGACCGCTGCTGAGCGGAGTGCACACCGACTACGTTG 540
Qy 541 CGCTCTTTCACCGAGTGTGAGTGTGCGCTGAACTTCTACTACAAACGAGAAACACGGA 600
Db 541 AGATCAATTCACAGATGTCTTAACTAGACTTAACTTAACTTAACTTAACTTAACTT 600
Qy 601 AACACCCCTTTCAACCTGGAAGTCTAGTGTACCCCTTGTCTGCTATCAAGCTGCT 660
Db 601 AATACCTCTTCACTGAGTGTGAGTGTGAGTGTGAGTGTGAGTGTGAGTGTGAGTGT 660
Qy 661 AAGCTGCTGAGCTACCTGCGAAGGAGTGTGAGTGTGAGTGTGAGTGTGAGTGTGAGTGT 720
Db 661 AATGCTGCTGAGCTACCTGCGAAGGAGTGTGAGTGTGAGTGTGAGTGTGAGTGTGAGTGT 720
Qy 721 TGTCTGAGGAGGAGTGTGAGTGTGAGTGTGAGTGTGAGTGTGAGTGTGAGTGTGAGTGT 780
Db 721 TGTCTGAGGAGGAGTGTGAGTGTGAGTGTGAGTGTGAGTGTGAGTGTGAGTGTGAGTGT 780
Qy 781 TGTACCAACTGCTGCTTCACTTCTACAAACGCTGCTTCACTTCACTTCACTTCACTTCA 840
Db 781 TGTACCAACTGCTGCTTCACTTCTACAAACGCTGCTTCACTTCACTTCACTTCACTTCA 840
Qy 841 TCTACCTGCTGCTGCTTCTGCTTCAACGAGTGTGAGTGTGAGTGTGAGTGTGAGTGTGAG 900
Db 841 AGTACATGCTGCTGCTTCTGCTTCAACGAGTGTGAGTGTGAGTGTGAGTGTGAGTGTGAG 900
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Qy 901 GCTGCTACCTGGCTAAGCAGTGTAAACATCGTGTGCTTCCGACGAAACCGCTATCGTCTT 960
Dy 901 GCTGCTACCTGGCTAAGCAGTGTAAACATCGTGTGCTTCCGACGAAACCGCTATCGTCTT 960
Qy 961 GGAGCTACCAACCTGATCCCTCCAGACGAGTGTGCTGAACCTGCTGCTGAACCTTCTAC 1020
Dy 961 GGAGCTACCAACCTGATCCCTCCAGACGAGTGTGCTGAACCTGCTGCTGAACCTTCTAT 1020
Qy 1021 TTCCAGCGAAACCACTTCCAGGCTGGATCTTCTCGTGTAAAGCTTGTCTGCTTAACAAG 1080
Dy 1021 TTCCAGCGAAACCACTTCCAGGCTGGATCTTCTCGTGTAAAGCTTGTCTGCTTAACAAG 1080
Qy 1081 GTGAGGAGCTGTGCTACCGCTGGAGAACCGCTGATCCCTGATCGCTGATCGCTGCTG 1140
Dy 1081 GTGAGGAGCTGTGCTACCGCTGGAGAACCGCTGATCCCTGATCGCTGATCGCTGCTG 1140
Qy 1141 GAGTGTCTGCTGACCGCTGCTGACCGAGGACCACTTCTACCTACACAGCGCTGCT 1200
Dy 1141 GAGTGTCTGCTGACCGCTGCTGACCGAGGACCACTTCTACCTACACAGCGCTGCT 1200
Qy 1201 TCTGAGTGTGAGTGTGCTTAACTTCTACACCAAGCAGACCGCTGCTGCTGCT 1260
Dy 1201 TCTGAGTGTGAGTGTGCTTAACTTCTACACCAAGCAGACCGCTGCTGCTGCT 1260
Qy 1261 GGAATCGACACCTGCTACCTCTTGTAAACAGAGCTGACCTTCCGAGCTGAGGCTAACCTG 1320
Dy 1261 GGAATCGACACCTGCTACCTCTTGTAAACAGAGCTGACCTTCCGAGCTGAGGCTAACCTG 1320
Qy 1321 CCTGAGTGTGAGTGTGAGTGTGAGTGTGAGTGTGAGTGTGAGTGTGAGTGTGAGTGT 1380
Dy 1321 CCTGAGTGTGAGTGTGAGTGTGAGTGTGAGTGTGAGTGTGAGTGTGAGTGTGAGTGT 1380
Qy 1381 CTGCTGATCTTCTACTA 1397
Dy 1381 CTGCTGATCTTCTACTA 1397
RESULT 7
ID AAA97075
XX AAA97075 standard; DNA: 138 BP.
AC AAA97075;
XX
DT 18-DEC-2000 (first entry)
XX
DE G5 synthetic gene synthesis primer 3205.
XX
KW Immobilisation antigen; i-antigen; ichthyophthiriasis; vaccine;
KW white spot disease; freshwater fish; immune response; infection control;
KW PCR primer; ss.
XX
OS Synthetic.
XX
PN WO200046373-A1.
XX
PD 10-AUG-2000.
XX
PF 04-FEB-2000; 2000WO-USO2962.
XX
PR 04-FEB-1999; 99US-0118634.
PR 02-MAR-1999; 99US-0122372.
PR 17-MAR-1999; 99US-0124905.
PR 27-APR-1999; 99US-0131121.
XX
PA (UYGE-) UNIV GEORGIA RES FOUND INC.
PA (CORR ) CORNELL RES FOUND INC.
PA (CLAR/) CLARK T G.
PA (DICK/) DICKERSON H W.
XX (LINT/) LIN T.
XX
PI Clark TG, Dickerson HW, Lin T;
XX
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DR WPI; 2000-506071/45.
XX
PT Novel i-antigen polypeptides and polynucleotides from Ichthyophthirius
PT multifiliis, useful for prophylaxis and treatment of Ichthyophthirius
PS infection in fish
XX
XX Disclosure; Figure 12; 144pp; English.
XX
XX This invention relates to novel i-antigen polypeptide sequences.
XX I-antigens or immobilisation antigens are common to a variety of
XX hymenostomatid ciliates and their expression varies in response to
XX environmental stimuli. This invention relates to i-antigens in
XX Ichthyophthirius multifiliis, a protozoan which is an obligate parasite
XX of freshwater fish causing ichthyophthiriasis or white spot disease. The
XX invention includes two polypeptide and polynucleotide sequences for two
XX i-antigens, of 48 and 55 kb. Also included in the invention are
XX antibodies capable of binding to the nucleotide sequences and a method
XX for identifying i. multifiliis serotypes using the nucleotide sequences.
XX A composition (containing the i-antigen nucleotide) capable of eliciting
XX an immune response in fish is useful for prophylaxis, treatment or for
XX controlling i. multifiliis infection in fish. Polynucleotide or protein
XX vaccines comprising a portion of the amplified product encoding an
XX antigenic i-antigen polypeptide obtained is also useful for treating or
XX preventing i. multifiliis infection in fish. Sequences AAA97036-A97042,
XX and AAA97060, AAA97065 and AAA97089 represent i-antigen genes and gene
XX fragments identified in the invention. Sequences AAA97043-A97064
XX (excluding AAA97060) and AAA97071-A97088 represent primers used in the
XX isolation of the i-antigen gene sequences. Sequences AAB25859-B25889 and
XX AAB25893-B25906 represent i-antigen protein and peptide sequences.
XX
XX Sequence 138 BP; 30 A; 43 C; 32 G; 33 T; 0 other;
XX
XX Query Match 9.8%; Score 138; DB 21; Length 138;
XX Best Local Similarity 100.0%; Pred. No. 7.1e-30;
XX Matches 138; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
XX
XX QY 313 GCTACCGACTACGCTGCTATCATCACCAGGTGTGTAACCTGTCGCATCAACTTCTACAAC 372
XX Db 1 GCTACCGACTACGCTGCTATCATCACCAGGTGTGTAACCTGTCGCATCAACTTCTACAAC 60
XX
XX QY 373 GAGAACGCTCTAACTTCAACGCTGAGGCTTCTACCTGTACCGCTGTCTGTGAACCCG 432
XX Db 61 GAGAACGCTCTAACTTCAACGCTGAGGCTTCTACCTGTACCGCTGTCTGTGAACCCG 120
XX
XX QY 433 GTGGGAGGAGCTGTGACC 450
XX Db 121 GTGGGAGGAGCTGTGACC 138
XX
XX RESULT 8
XX AAA97076/C
XX ID AAA97076 standard; DNA; 123 BP.
XX AC AAA97076;
XX XX
XX XX 18-DEC-2000 (first entry)
XX XX
XX G5 synthetic gene synthesis primer 3206.
XX
XX Immobilisation antigen; i-antigen; ichthyophthiriasis; vaccine;
XX white spot disease; freshwater fish; immune response; infection control;
XX PCR primer; ss.
XX
XX Synthetic.
XX
XX WO200046373-A1.
XX PN
XX PD 10-AUG-2000.
XX XX
XX 04-FEB-2000; 2000WO-US02962.
XX PF
XX 04-FEB-1999; 99US-0118634.
XX PR
XX 02-MAR-1999; 99US-0122372.
XX KW
XX
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PR 17-MAR-1999; 99US-0124905.
XX 27-APR-1999; 99US-0131121.
XX
XX (UYGE-) UNIV GEORGIA RES FOUND INC.
XX (CORR ) CORNELL RES FOUND INC.
XX (CLAR/) CLARK T G.
XX (DICK/) DICKERSON H W.
XX (LINT/) LIN T.
XX
XX Clark TG, Dickerson HW, Lin T;
XX WPI; 2000-506071/45.
XX
XX Novel i-antigen polypeptides and polynucleotides from Ichthyophthirius
XX multifiliis, useful for prophylaxis and treatment of Ichthyophthirius
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XX invention includes two polypeptide and polynucleotide sequences for two
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XX antibodies capable of binding to the nucleotide sequences and a method
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XX vaccines comprising a portion of the amplified product encoding an
XX antigenic i-antigen polypeptide obtained is also useful for treating or
XX preventing i. multifiliis infection in fish. Sequences AAA97036-A97042,
XX and AAA97060, AAA97065 and AAA97089 represent i-antigen genes and gene
XX fragments identified in the invention. Sequences AAA97043-A97064
XX (excluding AAA97060) and AAA97071-A97088 represent primers used in the
XX isolation of the i-antigen gene sequences. Sequences AAB25859-B25889 and
XX AAB25893-B25906 represent i-antigen protein and peptide sequences.
XX
XX Sequence 123 BP; 25 A; 37 C; 39 G; 22 T; 0 other;
XX
XX Query Match 8.7%; Score 123; DB 21; Length 123;
XX Best Local Similarity 100.0%; Pred. No. 1.5e-25;
XX Matches 123; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
XX
XX QY 430 CGCGTGGGAGGAGCTGTGACCGCTGGAAACGCTGTACCATCGTGGCTCAGTGTAAACGTG 489
XX Db 123 CGCGTGGGAGGAGCTGTGACCGCTGGAAACGCTGTACCATCGTGGCTCAGTGTAAACGTG 64
XX
XX QY 490 GCTTGTCTCTACCGGAACCGCTCTGGACGACGAGTCACCGACCTACGTGGCTCTTTTC 549
XX Db 63 GCTTGTCTCTACCGGAACCGCTCTGGACGACGAGTCACCGACCTACGTGGCTCTTTTC 4
XX
XX QY 550 ACC 552
XX Db 3 ACC 1
XX
XX RESULT 9
XX AAA97071
XX ID AAA97071 standard; DNA; 117 BP.
XX AC AAA97071;
XX XX
XX XX 18-DEC-2000 (first entry)
XX XX
XX G5 synthetic gene synthesis primer 3201.
XX
XX Immobilisation antigen; i-antigen; ichthyophthiriasis; vaccine;
XX white spot disease; freshwater fish; immune response; infection control;
XX PCR primer; ss.
XX KW
```

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DT 18-DEC-2000 (first entry)
XX
XX G5 synthetic gene synthesis primer 3202.
XX
XX Immobilisation antigen; i-antigen; ichthyophthiriasis; vaccine;
KW white spot disease; freshwater fish; immune response; infection control;
KW PCR primer; ss.
XX
XX Synthetic.
XX
XX WO200046373-A1.
XX
XX 10-AUG-2000.
XX
XX 04-FEB-2000; 2000WO-US02962.
XX
XX 04-FEB-1999; 99US-0118634.
PR 02-MAR-1999; 99US-0122372.
PR 17-MAR-1999; 99US-0124905.
PR 27-APR-1999; 99US-0131121.
XX
XX (UYGE-) UNIV GEORGIA RES FOUND INC.
XX (CORR ) CORNELL RES FOUND INC.
XX (CLARK/) CLARK T G.
XX (DICK/) DICKERSON H W.
XX (LINT/) LIN T.
XX
XX Clark TG, Dickerson HW, Lin T;
XX
XX WPI; 2000-506071/45.
XX
XX Novel i-antigen polypeptides and polynucleotides from Ichthyophthirius
PT multifiliis, useful for prophylaxis and treatment of Ichthyophthirius
PT infection in fish -
XX
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CC invention includes two polypeptide and polynucleotide sequences for two
CC i-antigens, of 48 and 55 kD. Also included in the invention are
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CC controlling I. multifiliis infection in fish. Polynucleotide or protein
CC vaccines comprising a portion of the amplified product encoding an
CC antigenic i-antigen polypeptide obtained in fish. Sequences AAA97036-A97042,
CC and AAA97060, AAA97065 and AAA97089 represent i-antigen genes and gene
CC fragments identified in the invention. Sequences AAA97043-A97064
CC (excluding AAA97060) and AAA97071-A97088 represent primers used in the
CC isolation of the i-antigen gene sequences. Sequences AAB25859-B25889 and
CC AAB25893-B25906 represent i-antigen protein and peptide sequences.
XX
XX Sequence 117 BP; 34 A; 30 C; 26 G; 27 T; 0 other;
SQ
Query Match 7.4%; Score 105; DB 21; Length 117;
Best Local Similarity 100.0%; Pred. No. 2.3e-20;
Matches 105; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
QY 1 ATGAAGAACACATCTCTGGTATCCCTGATCATCTCTCTGTTTCATCAACGAGATCAAGTCT 60
DB 13 ATGAAGAACACATCTCTGGTATCCCTGATCATCTCTCTGTTTCATCAACGAGATCAAGTCT 72
QY 61 GCTAACTGTCTCTGTGGGAACCGAGACCAACACCGCTGGACAGGTG 105
DB 73 GCTAACTGTCTCTGTGGGAACCGAGACCAACACCGCTGGACAGGTG 117
RESULT 10
AAA97072/C
ID AAA97072 standard; DNA; 104 BP.
XX
XX AAA97072;
XX
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RESULT 11
AAA97073
ID AAA97073 standard; DNA; 100 BP.
XX
AC AAA97073;
XX
DT 18-DEC-2000 (first entry)
XX
DE G5 synthetic gene synthesis primer 3203.
XX
KW Immobilisation antigen; i-antigen; ichthyophthiriasis; vaccine;
KW white spot disease; freshwater fish; immune response; infection control;
KW PCR primer; ss.
XX
OS Synthetic.
XX
PN WO200046373-A1.
XX
PD 10-AUG-2000.
XX
PF 04-FEB-2000; 2000WO-US02962.
XX
PR 04-FEB-1999; 99US-0118634.
PR 02-MAR-1999; 99US-0122372.
PR 17-MAR-1999; 99US-0124905.
PR 27-APR-1999; 99US-0131121.
XX
PA (UYGE-) UNIV GEORGIA RES FOUND INC.
PA (CORR ) CORNELL RES FOUND INC.
PA (CLAR/) CLARK T G.
PA (DICK/) DICKERSON H W.
PA (LINT/) LIN T.
XX
PI Clark TG, Dickerson HW, Lin T;
PI WPI; 2000-506071/45.
DR
XX
PT Novel i-antigen polypeptides and polynucleotides from Ichthyophthirius
PT multifiliis, useful for prophylaxis and treatment of Ichthyophthirius
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CC environmental stimuli. This invention relates to i-antigens in
CC Ichthyophthirius multifiliis, a protozoan which is an obligate parasite
CC of freshwater fish causing ichthyophthiriasis or white spot disease. The
CC invention includes two polypeptide and polynucleotide sequences for two
CC i-antigens, of 48 and 55 kD. Also included in the invention are
CC antibodies capable of binding to the nucleotide sequences and a method
CC for identifying I. multifiliis serotypes using the nucleotide sequences.
CC A composition (containing the i-antigen polypeptide) capable of eliciting
CC an immune response in fish is useful for prophylaxis, treatment or for
CC controlling I. multifiliis infection in fish. Sequences AAA97036-A97042,
CC and AAA97060, AAA97065 and AAA97089 represent i-antigen genes and gene
CC fragments identified in the invention. Sequences AAA97043-A97064
CC (excluding AAA97060) and AAA97071-A97088 represent primers used in the
CC isolation of the i-antigen gene sequences. Sequences AAB25859-B25889 and
CC AAB25893-B25906 represent i-antigen protein and peptide sequences.
XX
SQ Sequence 100 BP; 16 A; 35 C; 24 G; 25 T; 0 other;
Query Match 7.1%; Score 100; DB 21; Length 100;
Best Local Similarity 100.0%; Pred. No. 5.9e-19;
Matches 100; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
QY 165 CGCTGCTGCTTCGAGCTTCTACCTGTACCCCTTGTCTCAGAAAGAGCGC 224
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Db 1 CGCTGCTGCTTCGAGCTTCTACCTGTACCCCTTGTCTCAGAAAGAGCGC 60
QY 225 TGGAGCTCAGCCTAACCCCTCCTGCTACCGCTAACCTGGTG 264
Db 61 TGGAGCTCAGCCTAACCCCTCCTGCTACCGCTAACCTGGTG 100
RESULT 12
AAA97080/C
ID AAA97080 standard; DNA; 100 BP.
XX
AC AAA97080;
XX
DT 18-DEC-2000 (first entry)
XX
DE G5 synthetic gene synthesis primer 3210.
XX
KW Immobilisation antigen; i-antigen; ichthyophthiriasis; vaccine;
KW white spot disease; freshwater fish; immune response; infection control;
KW PCR primer; ss.
XX
OS Synthetic.
XX
PN WO200046373-A1.
XX
PD 10-AUG-2000.
XX
PF 04-FEB-2000; 2000WO-US02962.
XX
PR 04-FEB-1999; 99US-0118634.
PR 02-MAR-1999; 99US-0122372.
PR 17-MAR-1999; 99US-0124905.
PR 27-APR-1999; 99US-0131121.
XX
PA (UYGE-) UNIV GEORGIA RES FOUND INC.
PA (CORR ) CORNELL RES FOUND INC.
PA (CLAR/) CLARK T G.
PA (DICK/) DICKERSON H W.
PA (LINT/) LIN T.
XX
PI Clark TG, Dickerson HW, Lin T;
PI WPI; 2000-506071/45.
DR
XX
PT Novel i-antigen polypeptides and polynucleotides from Ichthyophthirius
PT multifiliis, useful for prophylaxis and treatment of Ichthyophthirius
PT infection in fish
XX
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CC of freshwater fish causing ichthyophthiriasis or white spot disease. The
CC invention includes two polypeptide and polynucleotide sequences for two
CC i-antigens, of 48 and 55 kD. Also included in the invention are
CC antibodies capable of binding to the nucleotide sequences and a method
CC for identifying I. multifiliis serotypes using the nucleotide sequences.
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CC controlling I. multifiliis infection in fish. Polynucleotide or protein
CC vaccines comprising a portion of the amplified product encoding an
CC antigenic i-antigen polypeptide obtained is also useful for treating or
CC preventing I. multifiliis infection in fish. Sequences AAA97036-A97042,
CC and AAA97060, AAA97065 and AAA97089 represent i-antigen genes and gene
CC fragments identified in the invention. Sequences AAA97043-A97064
CC (excluding AAA97060) and AAA97071-A97088 represent primers used in the
CC isolation of the i-antigen gene sequences. Sequences AAB25859-B25889 and
CC AAB25893-B25906 represent i-antigen protein and peptide sequences.
XX
```

```
SQ Sequence 100 BP; 22 A; 17 C; 32 G; 29 T; 0 other;
Query Match 7.1%; Score 100; DB 21; Length 100;
Best Local Similarity 100.0%; Pred. No. 5.9e-19;
Matches 100; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 753 GAACAACCTGGGTGCTCAGAACCGAGTGTACCAACTGTGCTCCTTAACCTCTACAAACA 812
|||||
Db 100 GAACAACCTGGGTGCTCAGAACCGAGTGTACCAACTGTGCTCCTTAACCTCTACAAACA 41
|||||

QY 813 CAACGCTCCTTAACCTCAACCCGTGGAACCTTACCTGCTG 852
|||||
Db 40 CAACGCTCCTTAACCTCAACCCGTGGAACCTTACCTGCTG 1

RESULT 13
AAA97077
ID AAA97077 standard; DNA; 99 BP.
AC AAA97077;
XX
XX
XX 18-DEC-2000 (first entry)
DT
DE G5 synthetic gene synthesis primer 3207.
XX
XX Immobilisation antigen; i-antigen; ichthyophthiriasis; vaccine;
KW white spot disease; freshwater fish; immune response; infection control;
KW PCR primer; ss.
XX
XX Synthetic.
OS
XX
XX WO200046373-A1.
XX
XX 10-AUG-2000.
PD
XX
XX 04-FEB-2000; 2000WO-US02962.
XX
XX 04-FEB-1999; 99US-0118634.
PR
XX 02-MAR-1999; 99US-0122372.
PR
XX 17-MAR-1999; 99US-0124905.
PR
XX 27-APR-1999; 99US-0131121.
XX
XX (UYGE-) UNIV GEORGIA RES FOUND INC.
PA (CORR ) CORNELL RES FOUND INC.
PA (CLAR/) CLARK T G.
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XX
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PI
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XX i-antigens, of 48 and 55 kd. Also included in the invention are
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XX vaccines comprising a portion of the amplified product encoding an
XX antigenic i-antigen polypeptide obtained is also useful for treating or
```

```
CC preventing I. multifiliis infection in fish. Sequences AAA97036-A97042,
CC and AAA97060, AAA97065 and AAA97089 represent i-antigen genes and gene
CC fragments identified in the invention. Sequences AAA97043-A97064
CC (excluding AAA97060) and AAA97071-A97088 represent primers used in the
CC isolation of the i-antigen gene sequences. Sequences AAB25859-B25889 and
CC AAB25893-B25906 represent i-antigen protein and peptide sequences.
XX
XX Sequence 99 BP; 27 A; 29 C; 21 G; 22 T; 0 other;
Query Match 7.0%; Score 99; DB 21; Length 99;
Best Local Similarity 100.0%; Pred. No. 1.1e-18;
Matches 99; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 532 GACTACGTGCGCTCTTTTCACCGAGTGTGTCAAGTGTGCGCTGAACCTTCTACTACACGGA 591
|||||
Db 1 GACTACGTGCGCTCTTTTCACCGAGTGTGTCAAGTGTGCGCTGAACCTTCTACTACACGGA 60
|||||

QY 592 AACACGGGAACACCCCTTTTCAACCCCTGGAAAGTCTCAG 630
|||||
Db 61 AACACGGGAACACCCCTTTTCAACCCCTGGAAAGTCTCAG 99
|||||

RESULT 14
AAA97074/C
ID AAA97074 standard; DNA; 95 BP.
AC AAA97074;
XX
XX 18-DEC-2000 (first entry)
DT
XX
XX G5 synthetic gene synthesis primer 3204.
DE
XX
XX Immobilisation antigen; i-antigen; ichthyophthiriasis; vaccine;
KW white spot disease; freshwater fish; immune response; infection control;
KW PCR primer; ss.
XX
XX Synthetic.
OS
XX
XX WO200046373-A1.
XX
XX 10-AUG-2000.
PD
XX
XX 04-FEB-2000; 2000WO-US02962.
PF
XX
XX 04-FEB-1999; 99US-0118634.
PR
XX 02-MAR-1999; 99US-0122372.
PR
XX 17-MAR-1999; 99US-0124905.
PR
XX 27-APR-1999; 99US-0131121.
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XX (UYGE-) UNIV GEORGIA RES FOUND INC.
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XX Clark TG, Dickerson HW, Lin T;
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XX WPI; 2000-506071/45.
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```

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Sequence 95 BP; 22 A; 24 C; 30 G; 19 T; 0 other:

	Query Match	6.7%	Score 95:	DB 21:	Length 95:
	Best Local Similarity	100.0%	Pred. No. 1.6e-17:		
	Matches 95:	Conservative 0:	Mismatches 0:	Indels 0:	Gaps 0:
QY	242 CTCCTGCTACCGCTAACTGGTGACCCAGTGTAACTGTAAGTGTCTCTGCTGGAACCGCTA	301			
Db	95 CTCCTGCTACCGCTAACTGGTGACCCAGTGTAACTGTAAGTGTCTCTGCTGGAACCGCTA	36			
QY	302 TCGCTGGAGGAGCTACCGACTACGCTGCTATCATC	336			
Db	35 TCGCTGGAGGAGCTACCGACTACGCTGCTATCATC	1			

RESULT 15	
AAA97078/c	
ID	AAA97078 standard; DNA; 95 BP.
XX	
XX	
AC	AAA97078;
XX	
DT	18-DEC-2000 (first entry)
XX	
XX	G5 synthetic gene synthesis primer 3208.
DE	
XX	
XX	
KW	Immobilisation antigen; i-antigen; ichthyophthiriasis; vaccine;
KW	white spot disease; freshwater fish; immune response; infection control;
KW	PCR primer; ss.
XX	
XX	Synthetic.
PS	

I-antigens or immobilisation antigens are common to a variety of
hymenostomatid ciliates and their expression varies in response to
environmental stimuli. This invention relates to i-antigens in
Ichthyophthirius multifiliis, a protozoan which is an obligate parasite
of freshwater fish causing ichthyophthiriasis or white spot disease. The
invention includes two polypeptide and polynucleotide sequences for two
i-antigens, of 48 and 55 kD. Also included in the invention are
antibodies capable of binding to the nucleotide sequences and a method
for identifying *I. multifiliis* serotypes using the nucleotide sequences.
A composition (containing the i-antigen nucleotide) capable of eliciting
an immune response in fish is useful for prophylaxis, treatment or for
controlling *I. multifiliis* infection in fish. Polynucleotide or protein
vaccines comprising a portion of the amplified product encoding an
antigenic i-antigen polypeptide obtained is also useful for treating or
preventing *I. multifiliis* infection in fish. Sequences AAAG7036-A97042,
and AAA97060, AAA97065 and AAA97089 represent i-antigen genes and gene
fragments identified in the invention. Sequences AAAG7043-A97064
(excluding AAAG7060) and AAAG7071-A97088 represent primers used in the
isolation of the i-antigen gene sequences. Sequences AAB25859-A925889 and
AAB25893-B25906 represent i-antigen protein and peptide sequences.

Sequence 95 BP; 22 A; 19 C; 33 G; 21 T; 0 other:

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Query Match          6.7%; Score 95; DB 21; Length 95;
Best Local Similarity 100.0%; Pred. No. 1.6e-17;
Matches 95; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 607 CCTTTCAACCCCTGGGAAAGCTCTCAGTGTACCCCTTGCTGCTATCAAGCGCTGTAACGTG 666
      |||||
Db 95 CCTTTCAACCCCTGGGAAAGTCTCAGTGTACCCCTTGCTGCTATCAAGCGCTGTAACGTG 36
      |||||

QY 667 GUTCAGGCTACCCCTGGGAAAGCAGCGCTACCATCAC 701
      |||||
Db 35 GUTCAGGCTACCCCTGGGAAAGCAGCGCTACCATCAC 1

Search completed: February 16, 2003, 17:00:43
Job time : 222.94 secs

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